Space Weather Forecast

Issued on Friday, 04 March 2022 at 13:09 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Geomagnetic Storms. Slightly increasing chance of R1 Minor Radio Blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Low over the period, with isolated Common class flares, the largest of which peaked at 03/2155 UTC. This flare originated from the small and innocuous AR2958, which has since faded from the visible disc. There are currently six numbered sunspot regions on the visible disc; AR2954 and AR2955 remain simple, mature and stable nearing the western solar horizon, with 2954 soon rotating off disc. AR2957 has increased slightly, with developing more intermediate spots. AR2960 is now the largest and most complex region on the visible disc and has developed intermediate spots with one of those merging with its leading spot. This region will continue to be monitored for any further developments as it continues to rotate onto the visible disc. The long duration Common class flare may have produced a Coronal Mass Ejection (CME), which potentially could have an Earth directed element. However, currently there is no evidence of a CME in available imagery to verify this possibility.

Solar Wind / Geomagnetic Activity: The solar wind started the period at background levels, around 380km/s, before increasing to slightly elevated levels, currently near 480km/s, possibly due to Earth entering into a fast wind from a coronal hole. The IMF was generally weak to moderate throughout, with a peak of 9nT at 04/0040UTC. The magnetic field was weak to moderate, as was the all important north-south component. Geomagnetic activity remained Quiet.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be Low, with occasional Common class flares and a chance of Moderate class flares. No significant regions are expected to rotate onto the visible disc from the far side through the period.

Solar Wind / Geomagnetic Activity: Earth is likely to experience a fast wind from two successive coronal holes. A CME, emitted on 2nd March, may brush Earth on day 3 (6th). Geomagnetic activity is expected to be Quiet to Unsettled at first, increasing Unsettled to Active today and then at times through the rest of the period, with a chance of isolated Minor geomagnetic storm intervals.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	40	30	40	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	20	20
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	3	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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